DOCUMENT RESUME

ED 163 525 CS 502 270

AUTHOR Horn, B. Ray
TITLE World Environmental Communication and Education Needs: How They Vary, What It Means.
PUB DATE May 78
NOTE 23p.; Paper presented at the Annual Meeting of the National Association for Environmental Education (7th, Chicago, Illinois, May 1978) ; Best copy available

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Communication (Thought Transfer); Comparative Analysis; Developed Nations; Developing Nations; *Economic Development; *Educational Needs; *Environmental Education; Financial Needs; Foreign Countries; Global Approach; *Needs Assessment; Personnel Needs; Program Development; Surveys; Technology Transfer; *World Affairs
IDENTIFIERS *Environmental Communication

ABSTRACT

Results of an assessment of the needs of 136 countries for environmental communication, education, and information resources are reported in this paper. Following an overview of the procedures used in conducting the assessment, levels of needs for environmental education (EE) resources are reported for Africa, the Arab states, Asia, Latin America, and northern, western, eastern, and southern Europe. The needs of North America are then compared in narrative and tabular form with worldwide needs in seven EE categories: legislation, funds, organizations, personnel, physical facilities, instructional materials, and programs. Five major themes are then elaborated that reflect recent trends in thinking about world development problems, and discussions are presented related to the relationship between EE and overall national development, the international transfer of EE technologies, and major guidelines for EE program development within North America. The central thesis of the paper, which parallels the views of Fritz Schumacher in "Small Is Beautiful," is that people can best meet their wants by scaling them down to what they really need and by developing socially and environmentally appropriate technologies to help satisfy those needs. (GW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

BEST COPY AVAILABLE

WORLD ENVIRONMENTAL COMMUNICATION AND EDUCATION NEEDS: HOW THEY VARY, WHAT IT MEANS*

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

B. Ray Horn

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

B. Ray Horn
Environmental Communication Program
School of Natural Resources
University of Michigan
Ann Arbor, Michigan 48109 USA

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED163525

Dr. Fritz Schumacher, author of one of the most relevant books of our time, Small Is Beautiful (1973), died an untimely death last September in Switzerland.

Shortly before his death, 4,000 University of Michigan students welcomed him as hero and patron saint of the world Environmental Movement. Ralph Nader reportedly carries a worn copy of Small Is Beautiful in his raincoat for reading on airplanes. And at a press conference, the Governor of California waved a copy in front of reporters, declaring that "If you want to understand my philosophy, read this" (Woodward, Barnes, and Bishop, 1976, p. 50).

Dr. Schumacher's message was as simple as it is powerful. People can best meet their wants by, first, scaling them down to what they really need and by, second, developing socially and environmentally appropriate technologies to help satisfy those needs. Such ideas, to be sure, are having a profound influence, especially in the international arena. The U.S. Congress, for example, has authorized 20 million dollars to the U.S. Agency for International Development (USAID) to help the less-developed countries invent appropriate technologies (Woodward, Barnes, and Bishop, 1976).

Although derived independently, my central thesis and the practical guidelines I will present parallel and support Schumacher's message. The cornerstone of my paper, however, will be the hard data recently collected through a study of environmental communication, education, and information resource-needs in 136 countries. This foundation study was conducted by this author and two other principal investigators, Dr. William B. Stapp and Dr. Louis Albala-Bertrand, under the aegis of the new United Nations (UNESCO-UNEP) International Environmental Education Programme (Horn, 1975b; Stapp, Albala-Bertrand, and Horn, 1975). The overall structure and process of the new UNESCO-UNEP program, however, has already been well described by Stapp and others in a number of recent articles, so it will not be outlined here (see Stapp, 1975, 1976a, 1976b, 1978; McGregor, 1977; and Ingram, 1977).

In this paper, I will *first* describe the nature and intent of the worldwide needs-assessment. *Second*, I will present some of its key findings. *Third*, I will compare the findings from North America with worldwide trends. *Fourth*,

CS502 270

*A paper presented at the Seventh Annual Conference of the National Association for Environmental Education (NAEE), Chicago, Illinois, USA, 1 May 1978. The views expressed in this paper as well as the selection and interpretation of facts are the responsibility of the author and do not necessarily reflect the views of UNESCO nor UNEP.

I will identify some themes that reflect recent thinking about world-development problems. *Fifth*, within the context of these themes, I will discuss what the findings of the worldwide study mean and some of their implications. *Sixth*, I will offer a few concrete guidelines for future environmental education (EE) program development in North America.

The UNESCO-UNEP Worldwide Study

The 136-country study gives us worldwide data about environmental communication, education, and information resource-needs and priorities. The study helps provide a sound knowledge-base to which national, regional, and worldwide EE policy decisions can be affixed. The study will be replicated every 3-5 years, giving us the needed information to help measure, evaluate, and recommend change over time. Any attempt at planning EE strategies without such a knowledge-base would be like driving blindfolded: you would have no idea where to steer.

The data were gathered principally through a 177-item questionnaire which yielded the remarkably high response rate of 83 percent, the usual response rate for this kind of study being about 20-30 percent. This rate can be accounted for, in part, by the very high interest expressed by UNESCO member states concerning EE and, in particular, the UNESCO-UNEP Program. Another likely influence on the high response rate was the personal visits by EE consultants to 83 countries in the less-developed world.

Coordinated through the Ministry of Education of each UNESCO member state, multidisciplinary teams from all major social sectors and interests were instructed to meet jointly and complete the questionnaire. The teams were to comprise not only environmental experts and officials but also representatives of citizen groups and policy-makers.

The questionnaire sought quantitative and qualitative information for each of 7 major categories of resource-needs. The conceptual framework delineating and interrelating the categories is shown in Figure 1. The unmeasured or assumed influences are shown with dotted lines.

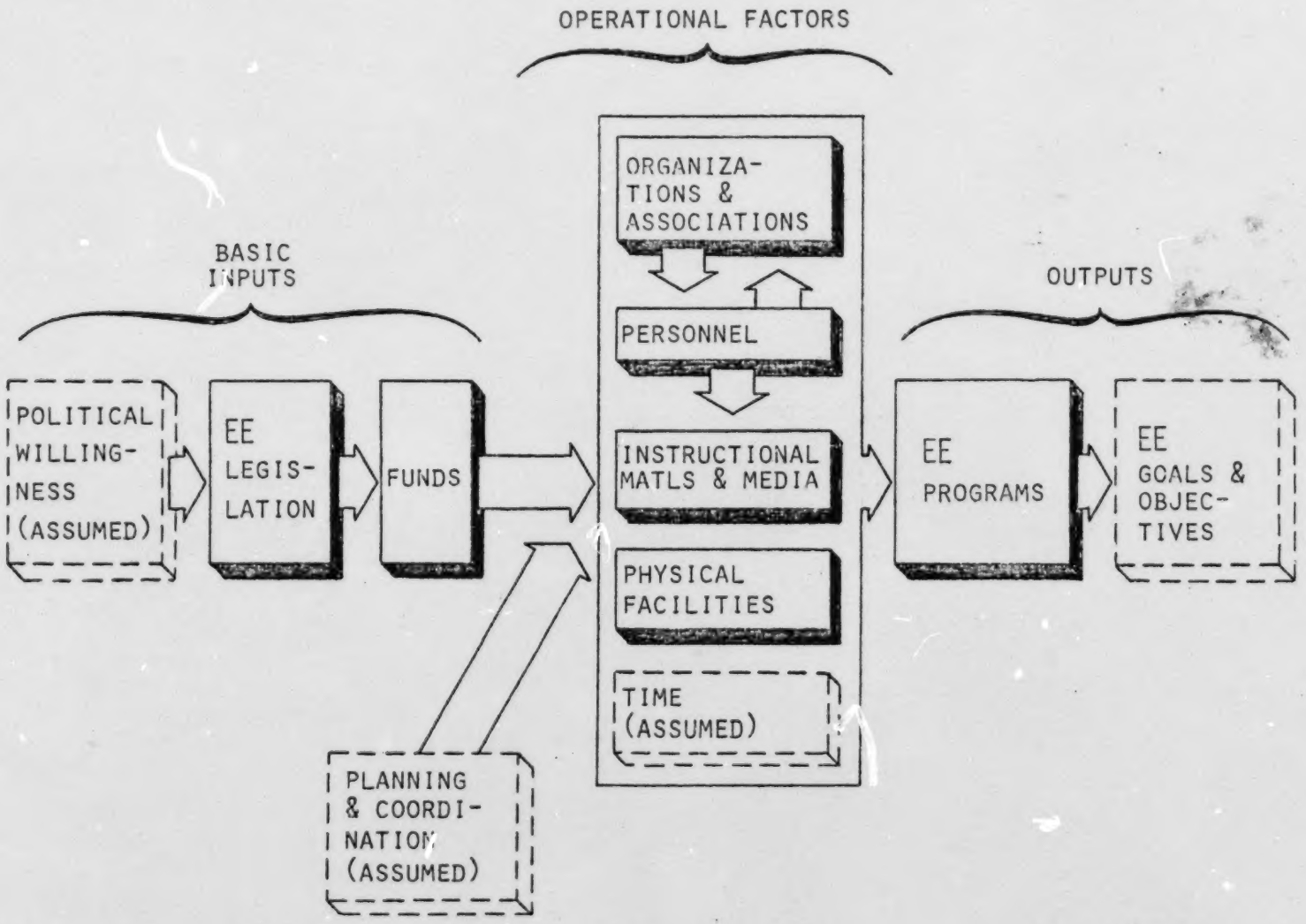
The two most basic inputs were EE *legislation* (measured with 8 questions) and *funds* for EE (measured with 10 questions). As shown in the accompanying Figure, a *political willingness* was assumed. The four operational factors were:

- EE *organizations and associations* (measured with 5 questions),
- trained EE *personnel* (measured with 8 questions)
- EE *instructional materials and media* (measured with 12 questions), and
- *physical facilities* for EE (measured with 5 questions).

Given the needed planning and coordination, and the proper timing, phasing, and mixing of the important elements, various kinds of EE *programs* for different target groups, in or out of school, can be put together. Also included would be mass media programs for the general public or specialized audiences. Thus, the questionnaire assessed the need for a wide range of alternative program types (measured with 10 questions).

FIGURE 1

CONCEPTUAL FRAMEWORK OF EDUCATIONAL PROCESS LEADING TO EE GOALS AND OBJECTIVES



Besides the 58 questions covering the 7 categories, other items were also included. For example, there were queries about the relationships between and within each category, and there were many open-ended items as well. Our aim, though, was not to chop the world into separate pieces like chunks of ice, but rather to melt the now fragmented EE world into a single ocean, and then study its life currents, crosscurrents, and the contours of its waves. In all, we were able to capture over 24,000 coded pieces of useful information through the mailed questionnaire alone.

Beyond the questionnaire, other kinds of complementary information were also gathered. For example, a great deal of quantitative and qualitative information was gleaned from official United Nations statistical documents, special public and in-house reports, and from the EE consultant missions to 83 countries (for example, see Horn, 1975c). Thus, the extensiveness of this first worldwide study was indeed large, creating a whole sea of information through which to navigate.

Since a book length document would be needed to relate all findings, only some of the key aspects will be described and interpreted below. Further, all comparisons will be made relative to the world average (mean) score for a particular item or cluster of items. In other words, instead of comparing one region with another, or singling out certain nations, the more neutral practice of comparing and contrasting regions against a worldwide baseline has been chosen.

On the other hand, it may be necessary to break regions down into subregions or even smaller units for operational purposes. Many aspects of some regions, for example, may be too diverse to make useful generalizations. In such cases, averaging may conceal more than it reveals. At this time, however, only findings at the regional level will be given. North America, for example, will be treated as a single regional unit.

Worldwide EE Resource Needs and How They Vary

Our major finding on the worldwide level was that 71 percent of the countries surveyed had "very high" levels of needs for EE resources. "Very high" means equal to or greater than 4.0 (on a 5-point scale). Among the very high needs, those perceived as being the most intense at the world level were:

(1) the training of personnel for environmental education and communication activities (81 percent of the countries) --the lack of trained EE manpower therefore being perhaps the most serious constraint,

(2) the preparation of instructional materials and media (73 percent), and

(3) the development of integrative environmentally-oriented programs (68 percent).

Reflecting some of the imbalances among nations, we found that almost all (84 percent) of the countries with a "high" (above 3.5) level of need for environmental education and communication programs were from the less-developed regions of Africa, Asia, Latin America, and the Arab States. But some significant pockets of program needs were also found in the more-developed regions.

Other conclusions indicate the necessity of a better integration of activities concerning the environment with other national programs, especially with those in the formal education sector. Formal education programs are often conducted in isolation from mass media programs and other very influential community activities.

A great deal of stress was also placed on the need to structure the content and orientation of EE programs around

(1) concrete problems (for a good programmatic example in North America, see Watkins, 1975),

(2) the acquisition of problem-solving skills (examples of the range of such skills are given by Bannon, 1972; Havelock and Havelock, 1973; Koberg and Bagnall, 1974; Horn, 1975a; Adams, 1976; Alshuler and others, 1977; and Souder and Zeigler, 1977), and

(3) interdisciplinary approaches (numerous North American examples may be found in the back issues of The Journal of Environmental Education).

Sixty-eight percent of the countries responding felt the need to strengthen organizations in regard to participation in EE activities. In this regard, the less-developed countries expressed a greater need than the more-developed countries. While EE organizations are just now beginning to emerge in many countries and regions, there is perhaps an oversufficiency of such national organizations in North America--again reflecting the great asymmetries worldwide. In the future, we are likely to see not only the rapid growth of EE organizations in the less-developed regions, but also a reduction in the number of national-level North American EE organizations. At the same time, the North American organizations will strengthen as they merge in order to lessen their inefficiencies and redundancies. Moreover, we are likely to see them become more international to better reflect a Spaceship Earth philosophy.

Within the next decade, we will likely experience the emergence of an international EE association, patterned somewhat after the now existing International Communication Association (ICA). The emergence of an issue-oriented, multilingual, scholarly international journal of EE will likely emerge too. Such a journal would be designed around concepts of global unity as well as diversity.

According to our world survey, some regions of our globe varied dramatically as to their needs for EE resources. Some regions of the world, for example, consistently reported needs for EE resources which were higher than the world averages. Africa, for example, was consistently higher than the world averages for all categories of EE resources. Along with Latin America, Africa had the highest levels of needs worldwide for *out-of-school adults*. Africa also reported needs equal to or greater than 4.0 (on a 5-point scale) for EE *centers, organizations and associations*, and trained EE *personnel*.

As one might predict, the Arab States reported a level of need for EE *funds* which was lower than the world average. They did, however, report a need level equal to or greater than 4.0 for both EE *organizations and associations* and trained EE *personnel*.

Asia reported a level of need equal to or greater than 4.0 for the development of EE *programs*. More specifically, their greatest needs were for programs on the *primary*, *secondary*, and *post-secondary* levels. On the post-secondary level, the training of teachers and other professionals received the highest ratings. Generally, the findings for the Asian region reflected high levels of needs, but not as high as Africa or Latin America. Also bear in mind the population differences between Asia and other regions. The country of India alone, for example, has a larger population than all of Africa and all of Latin America combined.

Latin America consistently had levels of EE needs that were higher than world averages for all educational sectors and across all EE resource categories, except for primary school programs. As mentioned, and a point worth stressing, the African and Latin American regions showed the highest level of need (compared to all other regions) for *out-of-school adult programs*. Consistent with worldwide scores, we also found that Latin America had given a rating equal to or greater than 4.0 for *funds* for the development and testing of EE innovations and for trained EE *personnel* to develop instructional materials and programs for all education sectors.

Northern Europe reported a need level equal to or greater than 4.0 for *funds* to develop EE programs on the *primary*, *secondary*, *post-secondary* levels (especially for the training of teachers and other professionals), and for *out-of-school youth* programs. This region seems to have the necessary trained personnel and know-how, but they appear to lack the slack resources to meet their programmatic needs.

Western Europe was consistently lower than the world averages for all EE resource categories. In fact, this region reported no needs with an intensity equal to or greater than 4.0. If the 4.0 criterion is lowered to 3.5, however, a need structure similar to (but less intense than) Northern Europe emerges, but with a greater stress on *out-of-school adults* than on *out-of-school youth*.

Eastern Europe, on the other hand, was consistently higher than the world averages in their need for EE *funds*, across all sectors except for *out-of-school adult* programs. The resource needs with a level equal to or greater than 4.0 were for (a) *funds* for the development and testing of EE innovations for all educational sectors except out-of-school adult programs, (b) EE *leadership training* for all educational sectors, and (c) EE *programs* at the *secondary* and *post-secondary* levels. On the post-secondary level, the needs were not only for teachers and other professionals but also for students in general.

Southern Europe reported a need for *funds* which was equal to or greater than 4.0, but this region differed from all other regions in one important way. Southern Europe was the only region to report an intense need for EE *legislation*. This unique need was reported in relation to funds for EE *program* development on all levels of formal education, especially for teacher training on the post-secondary level. Thus, Southern Europe's primary needs, for EE legislation, funds, and programs, were consistently higher than the world averages.

At this point, then, we can generally say that, among other things,

(1) over 70 percent of the countries studied had "very high" levels of need for EE resources,

(2) over 80 percent of those countries with "high" levels of need were in the world's less-developed regions,

(3) most countries appeared too poor to establish EE programs without outside financial aid, and

(4) most countries lacked sufficient trained EE personnel to assume EE leadership roles and to ensure quality programs.

In a nutshell, then, one could say that although *funds* are a necessary ingredient in the development of EE programs, such economic assistance is not sufficient to start EE programs. Technical and managerial skills are also a precondition. Like EE funds, such EE skills are also in shortest supply in the less-developed countries. This may not surprise anyone, but the point is that we do not have to guess anymore. More importantly, we know something about the complex structure of each need category, what some of the key interrelationships are, and we can speak on a level as concrete as specifying who it is within the general category of, say, a university that needs EE the most. We can, for example, tell you whether it is (a) pre-service teachers, (b) other pre-service professionals like engineers, or (c) other students.

How North America Compares

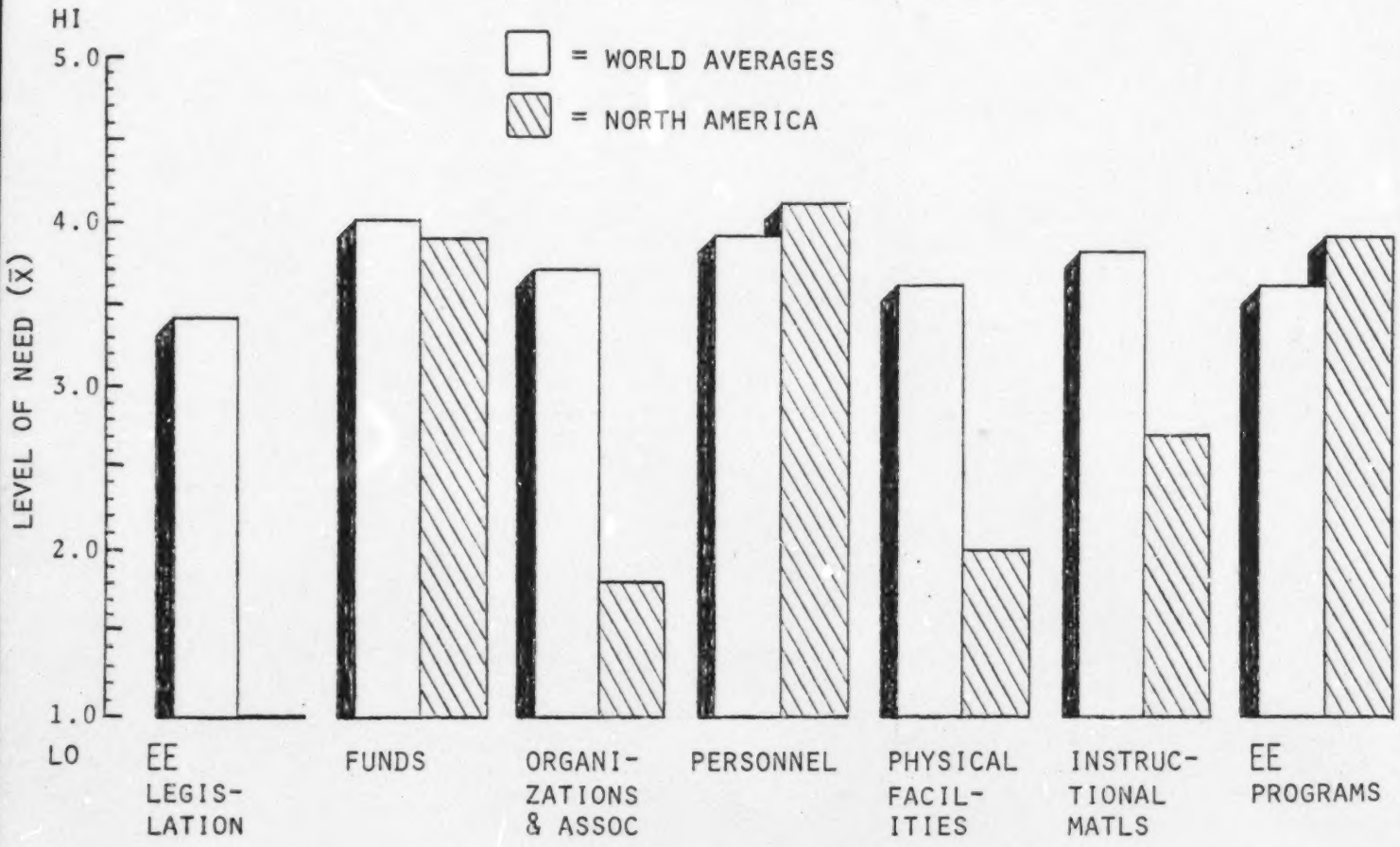
Figure 2 compares and contrasts each of the 7 major EE resource categories for North America with the world averages. As one might expect, North America was generally lower than the worldwide need-levels across most categories. In fact, no need for EE *legislation* was reported in the North American region. And, as shown, the need for EE *organizations and associations, physical facilities* and *instructional materials* was relatively low.

Figure 2 also shows that the need for EE *funds* in North America was right up there with the world average. This finding surprised many people from other regions who see North America as a super-rich region. What they do not seem to realize, however, is that the great financial wealth within the region is not in the hands of environmental educators. Thus, within the region, there is a great need for additional EE funds to adequately reach EE goals. One could dramatize the situation by saying that where most nations consider themselves indeed fortunate to get pennies allocated to EE, North America perhaps allocates dimes to the task--a task that is going to take dollars to accomplish. It is not a matter of funds per se, then, it is a matter of how they are allocated, a matter of priority. And priorities mirror values.

And since we all have to eat occasionally, the quantity and quality of EE *personnel* was related to available EE funds. In North America, the need for trained EE personnel stretched across all educational sectors. And, as shown by Figure 2, in order to meet the need for EE *programs*, then, you must have competently trained EE people who have the required funds to capitalize on the existing physical facilities and instructional materials and media. And as mentioned, the need for physical facilities and instructional materials, as well as for organizations and associations, was relatively low.

FIGURE 2

COMPARISON OF 7 MAJOR EE RESOURCE CATEGORIES FOR NORTH AMERICA WITH WORLD AVERAGES, WITH ALL EDUCATION SECTORS COMBINED*



*The combined education sectors are: Pre-School, Primary, Secondary School, Post-Secondary (or Higher Education), Out-of-School Youth, and Out-of-School Adult Education.

Since all of the input and operational factors listed to the left of the "program" category in Figure 2 are blended in order to produce an EE program, it makes sense that an unmet need in any of the input or operational factors would affect the level of need in the program category. Please keep in mind that all of the elements shown, and some not shown, interrelate in some very complex ways and that our intent here is only to draw attention to some of the most important EE resource-needs as reported by UNESCO member states.

Again referring to Figure 2, note that it statistically combines the scores for pre-school, primary, secondary, and post-secondary education. It also includes out-of-school youth and out-of-school adult scores in the same columns. At this point it would not be very useful to break down Figure 2 into its six now-combined sectors because the need structures for each of them were very similar, with one exception.

In Figure 3, we have split the deviating sector from the others. As shown, the need for EE programs for *out-of-school adult* populations reached an unusually high level. This makes sense, of course, in light of the apparent high level of general public "awareness" of environmental concerns in North America--"awareness" being defined as just a general consciousness of a situation, but without any direct attention to it or definite knowledge of its nature. After the smoldering public concern about environmental abuses caught fire in the early 1970s, public awareness climbed rapidly and now seems to have leveled off, especially in North America and Europe. In many other regions, however, such awareness is just now beginning to spread widely (cf. Roth, 1974).

But, as all good EE educators know, awareness is only one step (although critical) in the long problem-solving process of becoming knowledgeable about problems, developing attitudes about them, and engaging in the process of learning how to actually change the situation. Sooner or later we must draw each of these aspects into our net. Awareness, then, precedes the other steps as a necessary but not sufficient condition to effective environmental problem-solving. Our research shows a rather strong need in North America for out-of-school adult programs that encompass all phases of environmental problem-solving, a need that is not being adequately met in North America.

What The Findings Mean

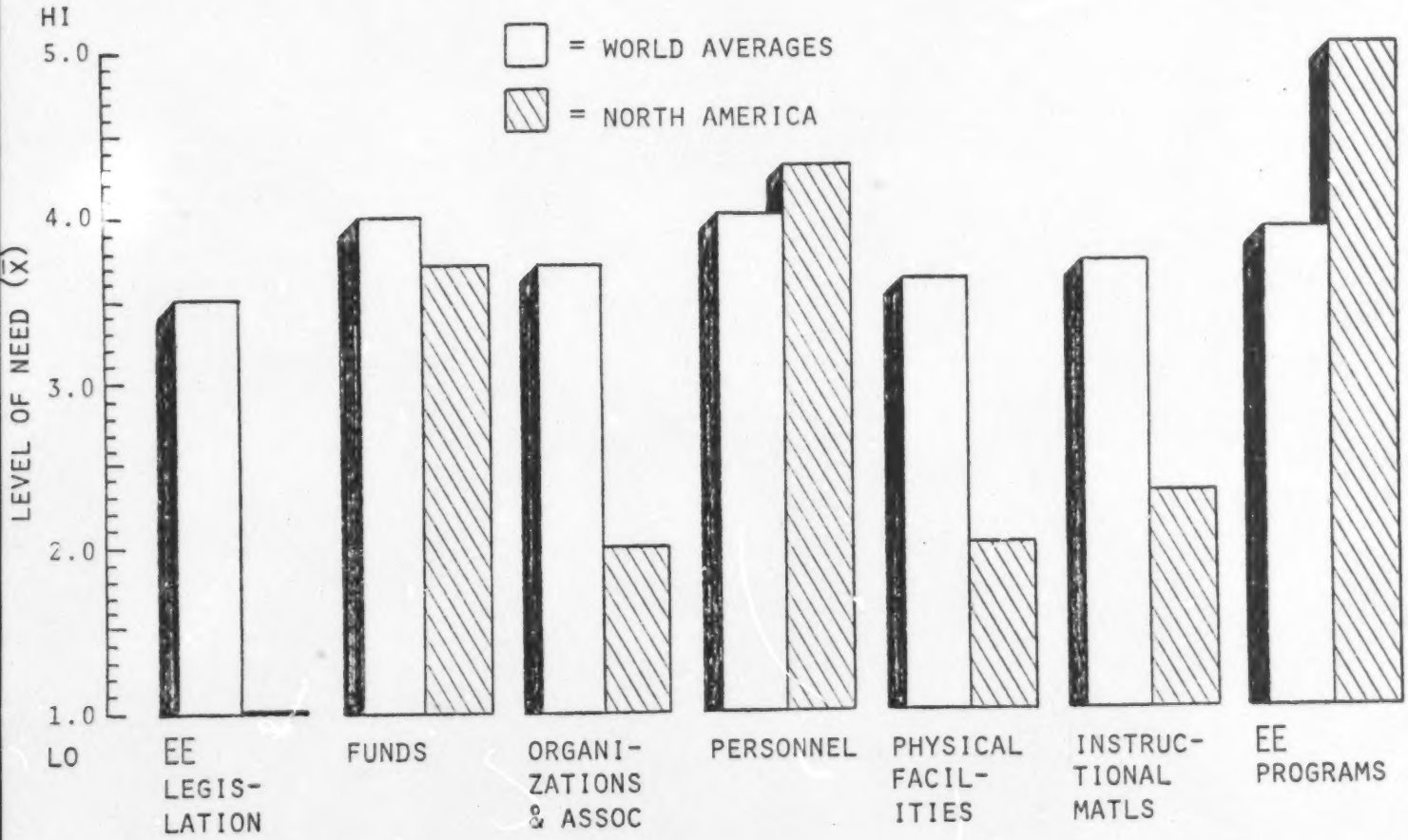
The term "meaning" can encompass at least five aspects. That is, we can talk in terms of (1) the intent or purpose of reporting such research findings, (2) what kinds of realities they designate or refer to, (3) what they define or translate into, (4) what caused them, or (5) what their effects on the future might be.

Rather than attempting to deal with each of these five aspects of the term "meaning" in a serial way, they will be lumped together more loosely and some of the more substantive issues will be pinpointed. To help decipher what the findings mean, however, it will be necessary to identify some of the larger problematic aspects of the world system that contribute to the patterns the findings have taken.

In a paper presented earlier this year (Horn, 1978), I elaborated five major themes that reflect recent thinking about world-development problems and the

FIGURE 3

COMPARISON OF 7 MAJOR EE RESOURCE CATEGORIES FOR NORTH AMERICA WITH WORLD AVERAGES, FOR OUT-OF-SCHOOL ADULT EDUCATION SECTOR ONLY



changing strands of the world's socio-political fabric. And it is these problem themes that provide the context for conducting a worldwide EE needs assessment. Without adequate elaboration of a problem context, it would be nearly impossible to accurately decode the meaning of the data gathered.

Therefore, not only are there some important variances in the needs for EE resources among various regions, but there is also a much larger template of themes or crosscurrents superimposed over any international effort to measure, evaluate, and satisfy those needs.

The first theme concerned the recent shift in the meaning of the term "national development"--especially in the less-developed countries. Although the commitment to national development has been worldwide, its meaning has been shifting beyond the materialism and aggregate growth objectives which dominated the now outmoded models of socio-economic development. The new models include such multiple objectives as sustained improvements in the quality of life, more equitable participation in the benefits of development, the elimination of acute poverty, and higher employment rates.

The conventional highly-materialistic and environmentally-damaging model of development, moreover, has been shown to be generally inappropriate for worldwide development. But when dealing globally, to be sure, we must begin to "accept the diverse models of economic and political development that the less-developed countries have chosen to benefit their peoples" (Lake, 1977, p. 3). But certain human rights do perhaps have universal application, such as the right of each human being to have a more equitable share of our planet's natural resources.

The second theme was the shift away from an over-emphasis on high-level, capital-intensive communication and education technologies--again, mainly in the less-developed countries. Although high-level technologies clearly have their place where certain preconditions are met, other middle-range technologies seem more appropriate for meeting the prime objectives of a more equitable national, regional, and global development strategy.

The third theme reflected the growing concern in some regions about the high degree of dependence of some nations on others. Such concerns have brought about a reexamination of the production and distribution of some communication and education materials and media. Pushed to its extreme, cultural dependency is often said to be like having to brush your teeth twice a day when you have nothing to eat. Such extremes aside, at its base, this concern reflects the emergence of new non-colonial patterns of socio-cultural development worldwide, which places higher values on national self-reliance and self-determination.

The fourth theme elaborated the idea that much of the imported communication and education materials and media used in some countries has been increasing the socio-economic gaps among the various social strata within some nations, and between the urban and rural populations, especially in less-developed countries. While part of the original assumption was that the imported media would narrow the gaps through what has been called a "trickle-down" theory of development, some recent research indicates that the imported media may be contributing to the widening of gaps (cf. Rogers, 1976; Schramm and Lerner, 1976).

The fifth theme I elaborated in my earlier paper drew attention to the now global concern about the relatively low degree of local participation in some national and international development efforts. The old "top down" approaches, in which local citizens (or entire nations) were in effect told what their problems were and then persuaded to follow certain specific lines of action to solve them, are now obsolete. Consequently, national and transnational communication strategies have been shifting toward less directive roles to "assist" in what should become a democratic self-development process.

Each of the above five themes and their elements, to be sure, are dynamically interconnected with one another as well as with many of the assumptions underlying alternative EE strategies between and within nations. The major point is that the international development experiences of the last few decades (particularly in less-developed countries) have taught, or should have taught, national and international environmental and EE problem-solvers and policy-developers many lessons. The central lessons are (1) that there are apparently many alternative yet valid pathways to national, regional, and global development and (2) that there are, therefore, many alternative yet valid forms of EE which are likely to emerge.

EE and National Development

Some of the questions the less-developed countries will be asking about EE will concern the relationship between EE and overall national development. While in North America the stress (at least in the formal education community) has been on what EE can do to up-grade formal education, the question the less-developed countries will perhaps be asking more often is what can EE do for overall socio-economic development.

In some ways, there are significant differences in the most popular North American brands of EE and the kinds needed to best meet the indigenously determined goals of many less-developed countries. Only a few of those differences, however, will be identified below.

Since most people in less-developed regions spend their time and energy attempting to meet their most basic physiological needs (cf. Maslow, 1970; Watt and others, 1977, pp. 101ff), EE programs in those areas are going to have to help meet those needs (cf., for example, Faure and others, 1972; and OISE and UNESCO, 1975). We know that an entire organism is involved in the gratification of a strong need, so a hungry person is very unlikely to find the kinds of EE activities usually listed in North American curricular guides relevant. There are some exceptions, of course. The very small privileged classes who live in sections of urban areas in the less-developed countries, for example, attend schools very much like those which are widespread in North America. So the content and approach would be much more meaningful to them. But they are the small minority.

Many EE programs in North America are very highly urban-oriented, and rightly so, becuase that is where the greatest needs have been, and that is where most North Americans live. Most less-developed regions, on the other hand, are predominantly rural in character. And they are working very hard to prevent the migration of people from the agricultural lands to the already overcrowded urban centers. To help narrow the urban-rural gaps, then, and to improve the rural areas so people will want to stay there, EE programs in

most less-developed countries are going to have to be rural-oriented. About 77 percent of South Asia, for example, is rural. It is almost the reverse situation in North America.

In order to benefit the vast majority of humankind, EE programs in less-developed countries are going to have to put a very heavy stress on increasing rural food production, better nutrition, preventive health, and a more practical education (World Bank, 1975, p. v). EE programs will have to be much more closely related to employment and to the work-place environment (rural or urban) of a labor-intensive job market.

Poor farming practices, which may significantly contribute to the problem of excessive particulate matter in the atmosphere, might be a place to start a problem-specific EE program in, say, South Asia (cf. Russell and Landsberg, 1972, p. 50). EE program strategies have to be localized, then, because educational objectives arise from a country's norms and cultural values which are quite diverse worldwide (cf., for example, Horn, 1965). For instance, in North America, formal education is very decentralized and religion is non-governmental. In many other countries, on the other hand, education is nationalized and in some cases there is a strong national Ministry of Religion. These different arrangements reflect different cultural values just as the content and orientation of EE programs in North America reflect North America's norms and cultural values (La Belle, 1973; Buzzati-Traverso, 1977).

What I have chosen to call the "EE effects gap" is also an increasing concern in less-developed countries. Will the effects or the impact of a given EE program serve to widen or narrow the socio-economic gaps within a country or region? Will the benefits go entirely into the urban centers, making them better off but leaving the rural poor the same, and therefore further widening the socio-economic gaps within a nation? To be consistent with international trends, then, the potential "EE effects gap" of each multinational project must be reviewed. And, just as environmental educators advocate the use of environmental impact statements for evaluating the consequences of, say, a new housing development, it will not be long before environmental educators will have to submit environmental impact statements along with EE program proposals. Included in those impact statements, of course, will be the social consequences of a program too. Thus, learning how to write EE impact statements is a top priority.

EE Technology Transfer

The problems of the international transfer of EE technologies will be a major concern to the international EE community for many years to come. "EE technology," to be sure, is defined here broadly to mean the collection of EE strategies, concepts, tactics, techniques, materials, guidelines, and so forth, which has had some demonstrated usefulness somewhere in achieving EE goals. Technology means much more than just tractors and computers, and we are slowly learning that various intellectual conceptualizations are also powerful technologies which can have devastating impacts on people as well as their environments. Thus, when one thinks in terms of "appropriate technologies" (as in Schumacher's writings), we must also include appropriate EE technologies. Indeed, it was not by accident that the new UNESCO-UNEP International EE Programme is housed within the Science and Technology Education Division of UNESCO.

When a strong need for a particular EE resource is sensed in a less-developed country, for example, at least two key messages go out. The first message asks what innovations already exist which can meet the need. The second message asks what kind of development or experimentation should be done to meet the need. The first is usually called "knowledge scanning" and the second is called "knowledge production" (Havelock and others, 1974). In the case of North America, there is little doubt that there is a large chunk of North American EE technologies which is truly superior, for those who need them. And one way to help lessen the imbalances among nations is to spill-over EE technologies from North America where appropriate, thus helping to balance the scales among nations. But, to give people technologies where their needs are not, is like scratching where they do not itch.

However, one simply cannot transfer EE as it is commonly packaged in, say, North America to the less-developed world. Within North America, an EE innovation can often be transferred from one state or province to another by "dropping" it into some current social organization, which evaluates it, and then decides whether or not to adopt it. That is, the *context* is such that only the innovation has to be dealt with in order to get adoption. However, transfers of innovations to less-developed regions commonly require different strategies because before the innovation can be adopted (or adapted) an entire organizational infrastructure must be brought into existence as a context for receiving, reviewing, adapting, diffusing, etc. the innovation. The system of organization is often not there, or if it is, a suprastructure for implementing the innovation is not.

The mobilization for EE on the local village level in most less-developed countries, then, will likely require some new EE models. The dominant models in North America seem (a) too complicated and (b) too professionalized for widespread implementation throughout many regions of the world. Moreover, the dominant North American models are too material-resource intensive. A rural village in a less-developed country would more likely need an EE program design that can be implemented by village volunteers without large quantities of paper, instructional aids, and the like. Moreover, the impact of the program must be made visible and immediate to have village-level acceptance. The dominant North American models, which are predicated upon high-levels of individual and governmental income, are unlikely to work where those preconditions are nonexistent.

Therefore, in no case should there be an uncritical transfer of one region's conceptual frameworks and methodologies to another region. There are those at UNESCO who are very concerned about this and who are working on the development of guidelines for the appropriate transfer of EE-type technologies. In sum, "While our policies must be global in their concept, their implementation must be specific to each situation. Policies must be tailored to take into account the great diversities that exist among the developing countries" (Lake, 1977, p. 2).

There is, however, a definite place and role for the transfer of EE technolies between regions. But the emphasis should be placed on (1) critical and intelligent adaptations and (2) local program generation (for example, see Horn, 1971). Certain ideas will inevitably travel back and forth from one region to another and be modified on each trip. This is desirable. The rule and guideline, then, is that a country should invent or adapt, not adopt,

another region's EE models, materials, or media. Such a guideline can even apply within North America, but the consequences of not applying it from region to region are just magnified manifold. Cross-culturally there are many more pits to fall into (cf. Samovar and Porter, 1972; Sitaram and Cogdell, 1976).

Thus, it is likely that many of the North American brands of EE would have to change gears in order to meet the needs of people living beyond the richer urban centers in less-developed regions. A nagging question that needs to be asked, then, is to what extent, and in what aspects, is the current range of EE models in North America cross-culturally valid? Although we have had some Masters degree students who have been interested in this concern (for example, Kemperman, 1973), I would like to get some of our doctoral students to really dig into the question.

In conclusion, then, let me say that I have tried to touch upon some of the possible meanings and implications of the findings of our recently completed study of 136 countries. I will leave you with three major guidelines for future EE program development within North America as it relates to what has now rightfully become a worldwide EE Movement.

World EE Guidelines for North America

First: *We can best help the world EE Movement by helping put our own house in order by scaling down our wants to what we really need.* The Chinese have a saying that "Those who know when they have enough are rich."

Second: *We can best help the world EE Movement by learning to better globalize the EE materials and media we use in North America to reflect a much wider range of alternative views of the world and alternative futures.* Although it has already been demonstrated that educational systems have an important role in creating world images (see Saarinen, 1976; Remy and others, 1975), our EE programs need to address more candidly the international flow of raw materials and the resulting international policy dilemmas (see, for example, Lake, 1977; USDS, 1976).

Thus, a new goal of EE could perhaps be to develop a less parochial view of humankind. In this way, North American EE, as an agent of change, must also become the object of change. Unfortunately, the current trend seems to be that instead of EE people increasing their interest in global affairs, we are seeing an increasing interest on the part of global affairs experts in EE. This, of course, is desirable but it must become a two-way process (cf. Hansen, 1974).

Some of the specific things we need to do are (1) to content analyze our current EE materials and media for more-balanced views of global environmental problems and the range of alternatives available to solve them; (2) to identify the global EE policy-dilemmas and inconsistencies and add our best intellectual thinking to their understanding; (3) to contribute to the public debates. When we view the environment and EE from other world viewpoints, and when we try to help others, we realize how culture-bound many of our assumptions are, and we grow in knowledge and experience to improve ourselves and our children. Bulletin 47 (by Remy and others, 1975), published by the National Council for Social Studies, and the Social Studies Development Center's bibliography (by Basa and Codianni, 1975) are perhaps good places to begin. You might also want to consider joining the new Internet program (see SEP and UNESCO-UNEP, 1977).

Third: *We can best help the less-developed countries of the world by helping them design and produce their own EE models, materials, and media.* A major problem for less-developed countries will be finding the quality and quantity of EE expertise they need in almost every aspect of their EE program planning, development and implementation.

Hindu wisdom has told us for centuries, "Help thy brother's boat across, and lo! thine own has reached the shore." This means that you could make yourself available as a Peace Corps Volunteer, a United Nations Volunteer, or as an international EE consultant to travel and work in one of the many curriculum development centers around the world. The idea is to help people help themselves. Those who have participated in such a way claim it to have been the most significant educational experience of their lifetime. At UNESCO, we have a saying: "Allah does not subtract from one's life, those days spent doing environmental education."

REFERENCES

Adams, James L. (1976). Conceptual Blockbusting: A Pleasurable Guide to Better Problem Solving. San Francisco: San Francisco Book Company.

Alshuler, Alfred, and others (1977). "Collaborative Problem Solving as an Aim of Education in a Democracy: The Social Literacy Project," The Journal of Applied Behavioral Science, Vol. 13, No. 3 (July-September), pp. 315-26.

Bannon, Joseph J. (1972). Problem Solving in Recreation and Parks. Englewood Cliffs, New Jersey: Prentice-Hall.

Basa, Patricia, and Tony Codianni (1975). Global Perspectives: A Bibliography. Bloomington, Indiana: Mid-America Program for Global Perspectives in Education, Social Studies Development Center (SSDC), 513 North Park Street.

Buzzati-Traverso, Adriano (1977). "Some Thoughts on the Philosophy of Environmental Education," in UNESCO (ed.). Trends in Environmental Education. Paris, France: UNESCO, pp. 13-19.

Faure, Edgar, Felipe Herrera, Abdul-Ruzzak Kaddoura, Henri Lopes, Arthur V. Petrovsky, Majid Rahnema, and Frederick C. Ward (1972). Learning to Be: The World of Education Today and Tomorrow. Paris, France: UNESCO.

Hansen, William G. (1974). "Local Versus Global Perspectives in Environmental Education," in Environmental Education Program (ed.). Emerging Issues in Environmental Education: Proceedings. Ann Arbor, Michigan: School of Natural Resources, The University of Michigan, pp. 264-87.

Havelock, Ronald G., and Mary C. Havelock (1973). Training for Change Agents: A Guide to the Design of Training Programs in Education and Other Fields. Ann Arbor, Michigan: Center for Research on Utilization of Scientific Knowledge (CRUSK), Institute for Social Research (ISR), The University of Michigan.

Havelock, Ronald G., Edward M. Glaser, Ronald O. Lippitt, Elizabeth A. Markowitz, Bonnie B. Ramirez, and Everett M. Rogers (1974). Ideal Systems for Research Utilization: Four Alternatives. Washington, D.C.: Social and Rehabilitation Service (SRS), U.S. Department of Health, Education and Welfare.

Horn, B. Ray (1965). "Enseñanza En Los Estados Unidos" ("Teaching in the United States"), a paper presented at a teacher workshop sponsored by the La Salle Natural Science Foundation of Venezuela and the National Institute of Cooperative Education of Venezuela, Punta de Piedras, Nueva Esparta, Venezuela, South America, October.

Horn, B. Ray (1971). "Conservation and Outdoor Education in Venezuela," Journal of Outdoor Education, Vol. 5, No. 2 (winter), pp. 11-13.

Horn, B. Ray (1975a). "Communication Skills for Environmental Problem Solving," in Noel McInnis and Don Albrecht (eds.). What Makes Education Environmental? Louisville, Kentucky: Environmental Educators and Data Courier, pp. 267-89. Reprinted in General Semantics Bulletin, No. 44 (1977).

Horn, B. Ray (1975b). "Environmental Education Needs and Priorities: A Preliminary World Survey--Overview," a presentation given at the UNESCO-UNEP International Workshop on Environmental Education, Center for International Studies, University of Belgrade, Yugoslavia, 15 October.

Horn, B. Ray (1975c). Final Report of Environmental Education Mission to South Asia in 1975--Overview. Paris, France: UNESCO, Environmental Education Section.

Horn, B. Ray (1978). "A General Systems Approach to Transnational Environmental Communication (TEC) Networks," a paper presented on the panel on "Organizational and Institutional Implications of General Systems Thinking," at the joint Annual Meeting of the Society for General Systems Research (SGSR) and the American Association for the Advancement of Science (AAAS), Washington, D.C., 15 February. Reprinted in Richard F. Ericson (ed.) (1978). Avoiding Social Catastrophies and Maximizing Social Opportunities: The General Systems Challenge. Washington, D.C.: Society for General Systems Research, pp. 502-11.

Ingram, Derek (1977). "Operating Instruction for A Small Planet," Development Forum, Vol. 5, No. 8 (November-December), p. 5.

Kemperman, Meredith J. (1973). "The Process of Conservation Education in a Developing Country." Masters Degree practicum, School of Natural Resources, The University of Michigan.

Koberg, Don, and Jim Bagnall (1974). The Universal Traveler: A Soft-Systems Guide to Creativity, Problem-Solving, and the Process of Design. Los Altos, California: Kaufmann.

La Belle, Thomas J. (1973). "Cultural Determinants of Educational Alternatives," New Directions for Education, No. 4 (winter), pp. 27-46.

Lake, Anthony (1977). "The United States and the Third World: Economic Issues," a paper presented at the Annual Meeting of the African Studies and Latin American Studies Association, Houston, Texas, 5 November. Washington, D.C.: U.S. Department of State, Bureau of Public Affaires.

Maslow, Abraham H. (1970). Motivation and Personality. 2d ed. New York: Harper & Row.

McGregor, Alan (1977). "In and Out of School," Development Forum, Vol. 5, No. 7 (October), p. 4.

Ontario Institute for Studies in Education (OISE) and UNESCO (eds.) (1975). Education on The Move: Extracts from Background Papers Prepared for the Report of the International Commission on the Development of Education. Paris, France: UNESCO.

Remy, Richard C., James A. Nathan, James M. Becker, and Judith V. Torney (1975). International Learning and International Education in a Global Age. Washington, D.C.: National Council for the Social Studies.

Rogers, Everett M. (ed.) (1976). "Communication and Development: Critical Perspectives," special issue of Communication Research: An International Quarterly, Vol. 3, No. 2 (April).

Roth, Robert E. (1974). "International and National Environmental Education: A Status Report--1974," a paper presented at the Annual Meeting of the American Association for the Advancement of Science (AAAS), San Francisco, California, 26 February.

Russell, Clifford S., and Hans H. Landsberg (1972). "International Environmental Problems--A Taxonomy," in Robert Dorfman and Nancy S. Dorfman (eds.). Economics and the Environment: Selected Readings. New York: W.W. Norton, pp. 45-63. Originally published in Science, Vol. 172, No. 3990 (25 June 1971), pp. 1307-14.

Saarinen, Thomas F. (1976). Environmental Planning: Perception and Behavior. Atlanta, Georgia: Houghton Mifflin.

Samovar, Larry A., and Richard E. Porter (eds.) (1972). Intercultural Communication: A Reader. Belmont, California: Wadsworth.

Schramm, Wilbur, and Daniel Lerner (eds.) (1976). Communication and Change: The Last Ten Years--and the Next. Honolulu, Hawaii: The University Press of Hawaii.

Schumacher, E.F. (1973). Small Is Beautiful: Economics as if People Mattered. New York: Harper & Row.

Sitaram, Kondavagil S., and Roy T. Cogdell (1976). Foundations of Intercultural Communication. Columbus, Ohio: Charles E. Merrill.

Souder, William E., and Robert W. Zeigler (1977). "A Review of Creativity and Problem Solving Techniques," Research Management, Vol. 20, No. 4 (July), pp. 34-42.

Stapp, William B. (1975). "Environmental Education: Dynamics of the Unesco-UNEP Programme," Impact of Science on Society, Vol. 25, No. 4, pp. 331-34.

Stapp, William B. (1976a). "International Environmental Education: A Major Advance," Nature and Resources, Vol. 12, No. 1 (January-March), pp. 22-24.

Stapp, William B. (1976b). "International Environmental Education: The UNESCO-UNEP Programme," The Journal of Environmental Education, Vol. 8, No. 2 (winter), pp. 19-25.

Stapp, William B. (1978). "Impressions on the First Intergovernmental Meeting on Environmental Education," The Journal of Environmental Education, Vol. 9, No. 2 (winter), pp. 2-4.

Stapp, William B., Louis Albala-Bertrand, and B. Ray Horn (1975). Environmental Education Needs and Priorities: A Preliminary World Survey. (First Draft) Paris, France: UNESCO, Environmental Education Section.

Strategic Environmental Planning (SEP) and UNESCO-UNEP (1977). Internet: International Environmental Resources Network. 2d. ed. Concord, Massachusetts: Internet, P.O. Box 417.

U.S. Department of State (USDS) (1976). The United States and the Third World: A Discussion Paper. Washington, D.C.: U.S. Department of State, Bureau of Public Affairs, General Foreign Policy Series 301, Publication 8863.

Watkins, Margaret (1975). "Cuyahoga Heritage: A School/Community Environmental Education Project," in Noel McInnis and Don Albrecht (eds.). What Makes Education Environmental? Louisville, Kentucky: Environmental Educators and Data Courier, pp. 347-52.

Watt, Kenneth E.F., Leslie F. Molloy, C.K. Varshney, Dudley Weeks, and Soetjipto Wirosardjono (1977). The Unsteady State: Environmental Problems, Growth, and Culture. Honolulu, Hawaii: The University Press of Hawaii.

Woodward, Kenneth L., John Barnes, and James Bishop (1976). "Thinking Small," Newsweek, Vol. 87, No. 12 (22 March), p. 50.

World Bank, The (1975). The Assault on World Poverty: Problems of Rural Development, Education and Health. Baltimore, Maryland: Johns Hopkins.

ABOUT THE AUTHOR

B. RAY HORN is currently conducting research on transnational environmental communication problems and strategies with the Environmental Communication Program, School of Natural Resources, The University of Michigan, Ann Arbor. Formerly, he was with the United Nations (UNESCO-UNEP) International Environmental Education Program at their Paris, France, Headquarters, where he recently completed a study of environmental education and communication resource needs in 136 countries. Besides having been a consultant to a number of national and state governments, he was formerly the Planning Coordinator and Executive Director of the Governor's Environmental Education Task Force, Executive Office of the Governor, State of Michigan.

His doctoral work is in Natural Resources from The University of Michigan, where he focused on environmental education and communication problems and strategies. Besides having taught at The University of Michigan, he has also taught full-time for a number of years at Northern Illinois University, Southern Illinois University, and has been a Visiting Associate Professor at Bemidgi State College, Minnesota. In collaboration with William B. Stapp and others, he wrote Michigan's Environmental Future (Lansing: State of Michigan, 1973) which has been used as a planning model by many national and state governments. He has published over 35 professional papers, articles, and chapters in books, dealing with the interactions among environmental, educational, communication, and planning issues, such as "Interpersonal Communication of Environmental Education"(with Everett M. Rogers). Horn's work has received a number of commendations, such as the U.S. Environmental Protection Agency's (EPA) First Annual Environmental Quality Award and a Certificate of Appreciation from the President of the United States for contributions in the international development field.

B. RAY HORN
SCHOOL OF NATURAL RESOURCES
UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN 48109

2/78